


INFORMATION
SERVICES


AZ-SMART

Arizona's Socioeconomic Modeling, Analysis and Reporting Toolbox

RFQ Conference March 23, 2006




MARICOPA
ASSOCIATION OF
GOVERNMENTS




INFORMATION
SERVICES

Agenda

- Introductions
- Why Create a Common Approach
- What is Being Done Now
- Current Socioeconomic Modeling
- Future Socioeconomic Modeling
- AZ-SMART
- Questions




MARICOPA
ASSOCIATION OF
GOVERNMENTS




INFORMATION
SERVICES

Introductions

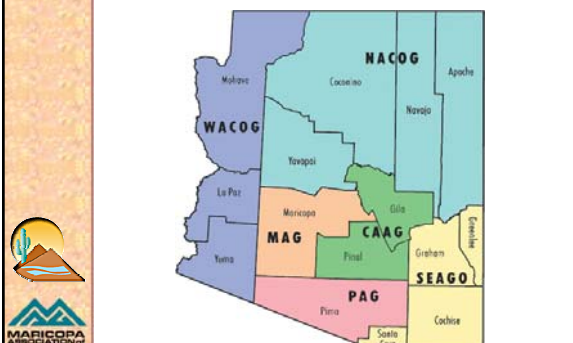



MARICOPA
ASSOCIATION OF
GOVERNMENTS




INFORMATION
SERVICES

What is a Council of Governments?






MARICOPA
ASSOCIATION OF
GOVERNMENTS




INFORMATION
SERVICES

What is a Metropolitan Planning Organization?

- Develops transportation plans and programs for urbanized areas of at least 50,000 people
- Provides for a complete intermodal transportation system
- MPO Air Quality Conformity Requirements
 - Requires network-based transportation models
 - Sets transportation modeling criteria

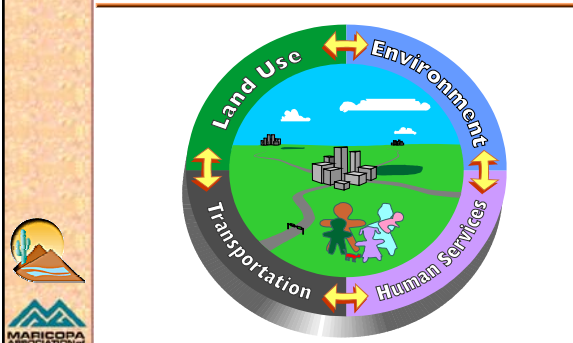



MARICOPA
ASSOCIATION OF
GOVERNMENTS




INFORMATION
SERVICES

MAG and PAG Planning Activities






MARICOPA
ASSOCIATION OF
GOVERNMENTS

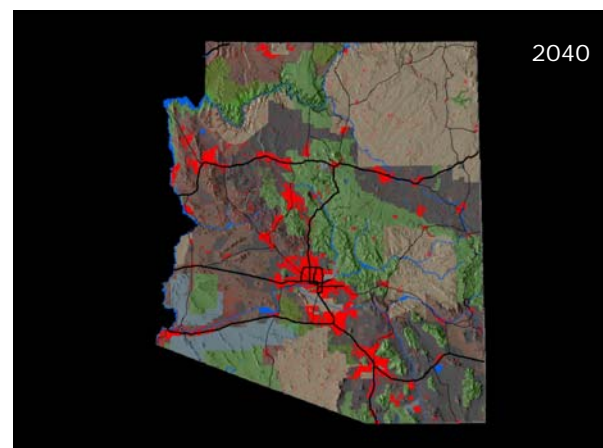
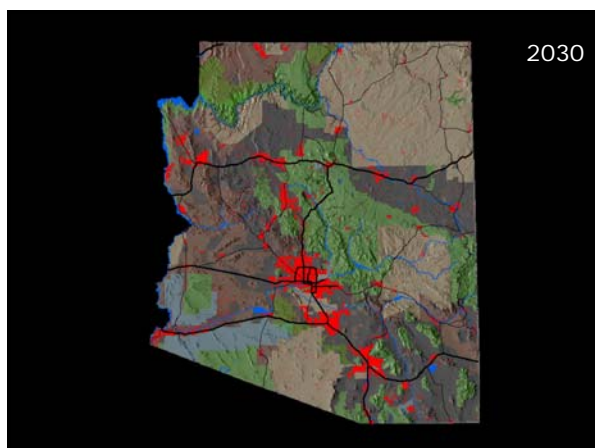
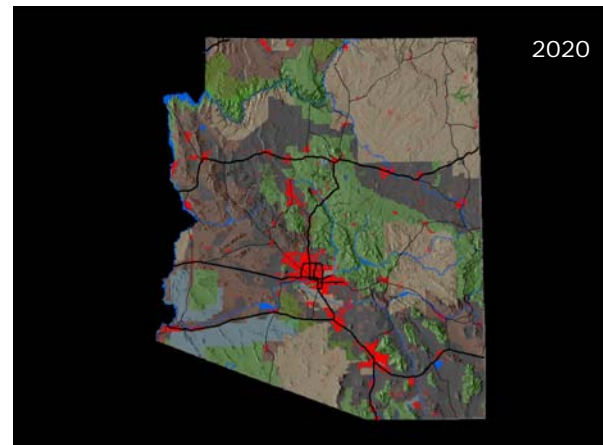
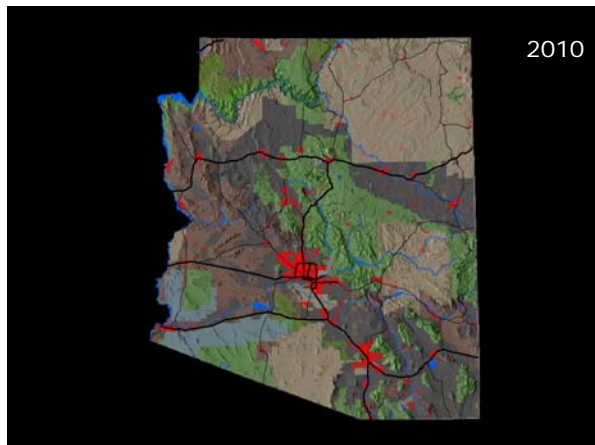
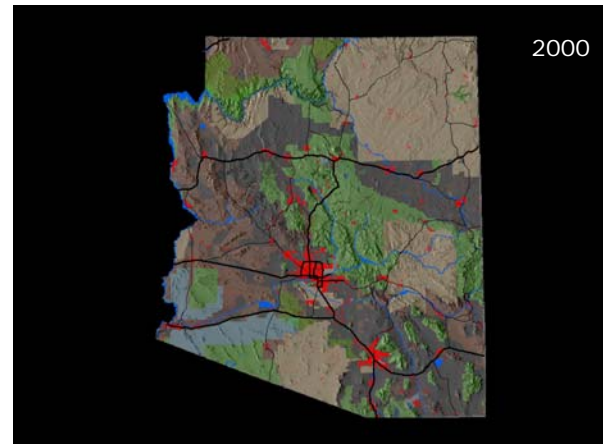


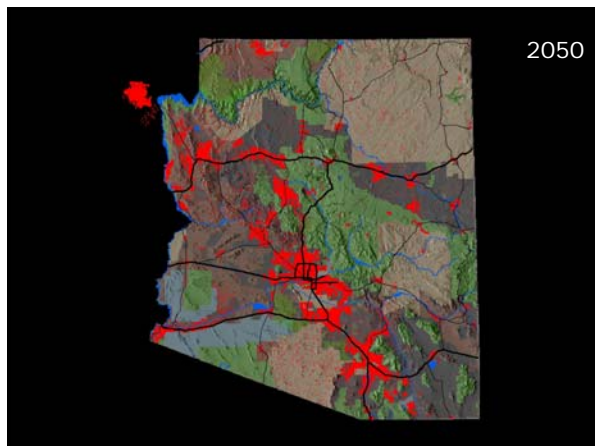
INFORMATION
SERVICES

Why Create a Common Approach to Socioeconomic Database Creation and Maintenance and Socioeconomic Modeling?



MARICOPA
ASSOCIATION OF
GOVERNMENTS





INFORMATION SERVICES

We need to share information for many planning purposes

- **Current year information**
 - Population and housing
 - Employment
- **Geographic information**
 - Land use
 - Developments
 - Job centers
- **Inventory databases**
 - Mobile homes and RV parks
 - Hotels, motels and resorts
- **Projections**
 - Population and housing
 - Employment

MARICOPA ASSOCIATION OF GOVERNMENTS

INFORMATION SERVICES

We have many of the same technical issues

- **What data and geographic information to collect and where to get it**
- **How to update and access data and geographic information**
- **What models are appropriate for socioeconomic estimates and projections**
- **How to use socioeconomic models**

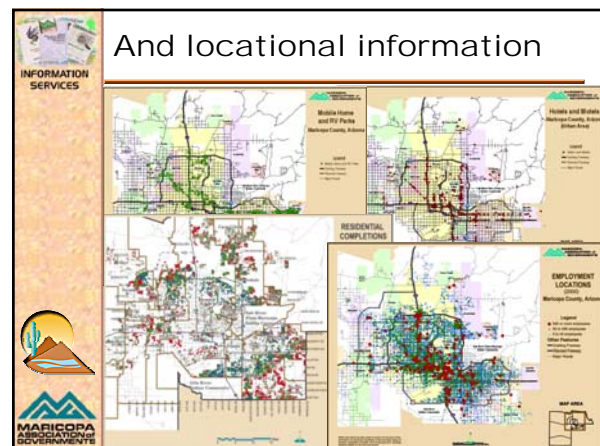
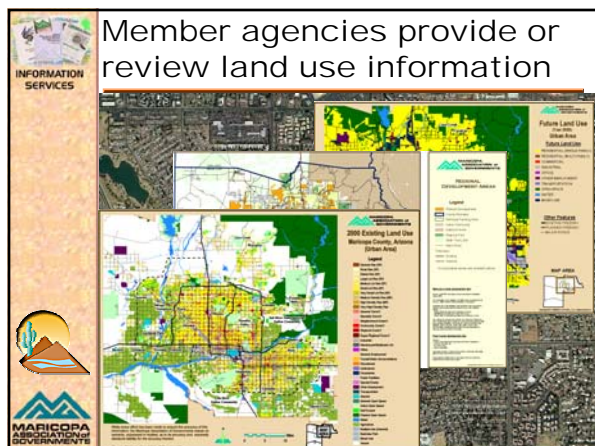
MARICOPA ASSOCIATION OF GOVERNMENTS

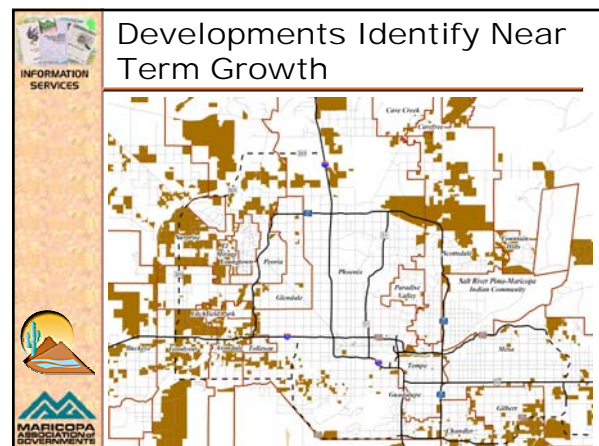
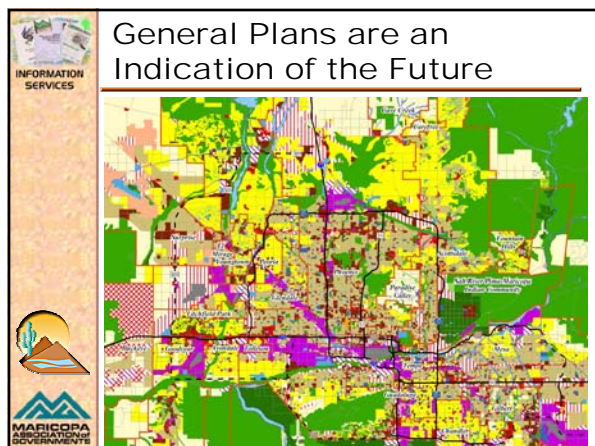
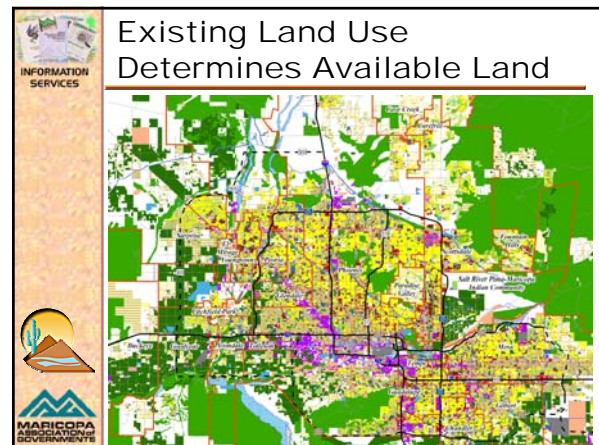
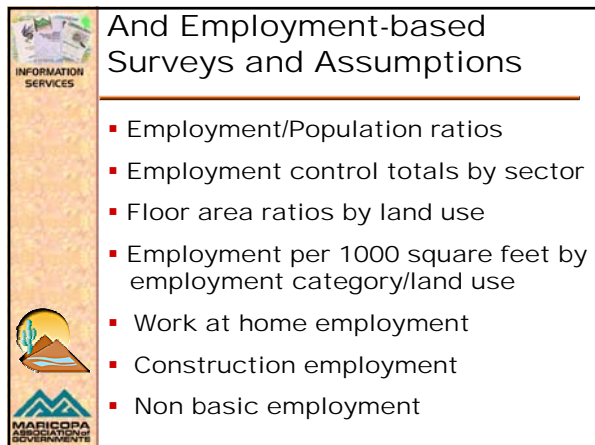
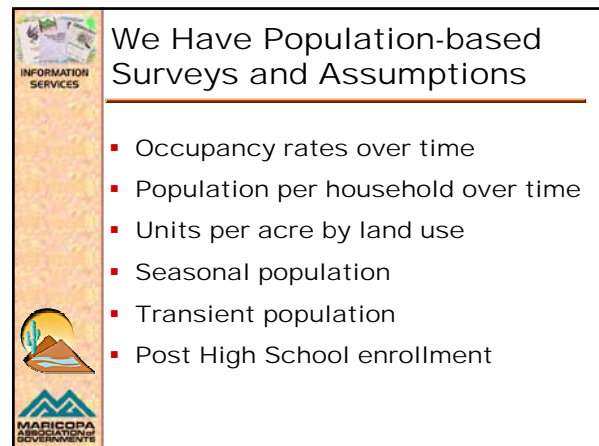
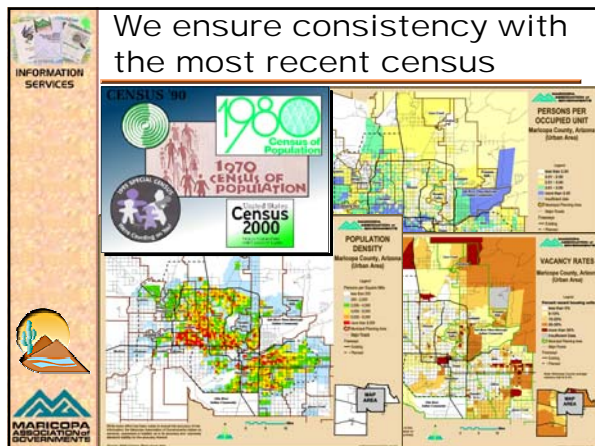
INFORMATION SERVICES

What Is Being Done Now?

(Using MAG information as the example. PAG process is very similar)

MARICOPA ASSOCIATION OF GOVERNMENTS





All Combined are the Vision
of the Future



Population Base

Population Capacity

Employment Base


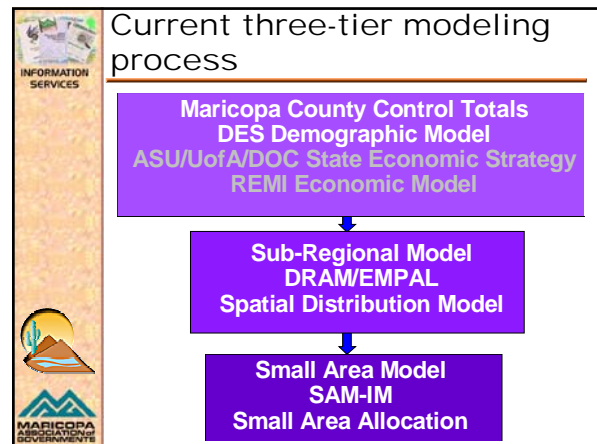
Employment Capacity



Current Socioeconomic Projections Modeling

MAG Geography (2003)



- In Maricopa County MPAs:
 - Municipal Planning Area (MPA) 27
 - Regional Analysis Zone (RAZ) 147
 - Traffic Analysis Zone (TAZ) 1868
- In Pinal County MPAs:
 - MPAs 7
 - RAZs 22
 - TAZs 133



County Level Models

- Population
 - Births
 - Deaths
 - Net Migration
- Employment
 - By Industry
 - By Sector
 - office
 - retail
 - industrial
 - public
 - other



Subcounty Regional Analysis Zone Model

- Spatial Allocation Model
- Projections in five year intervals
- Uses such factors as
 - Available land
 - Current population and employment
 - Accessibility
- County projections used as control totals for
 - Employment by Sector
 - Households

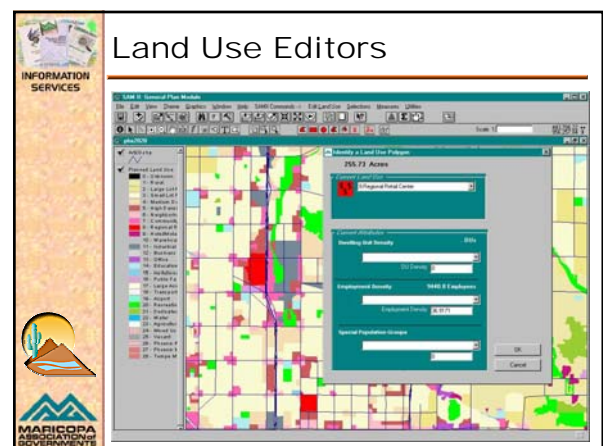
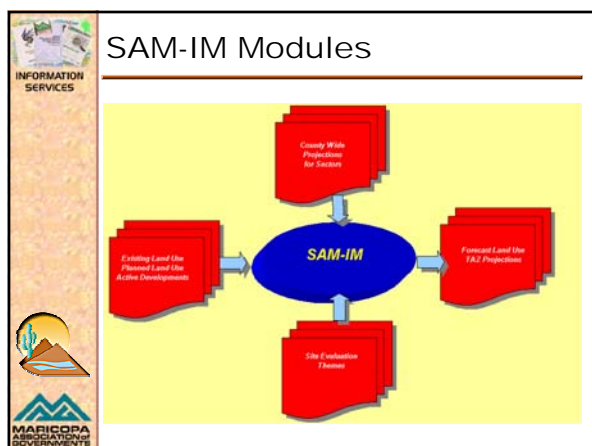
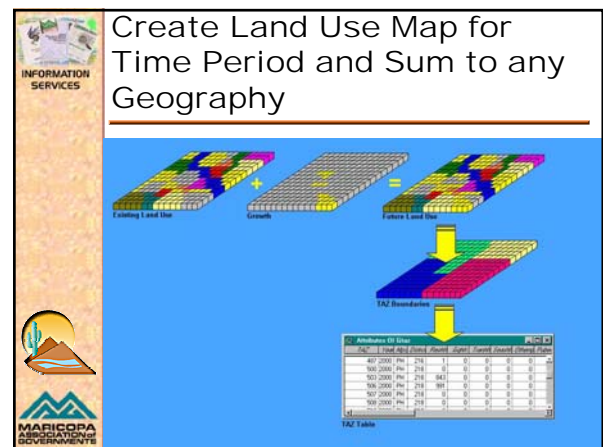
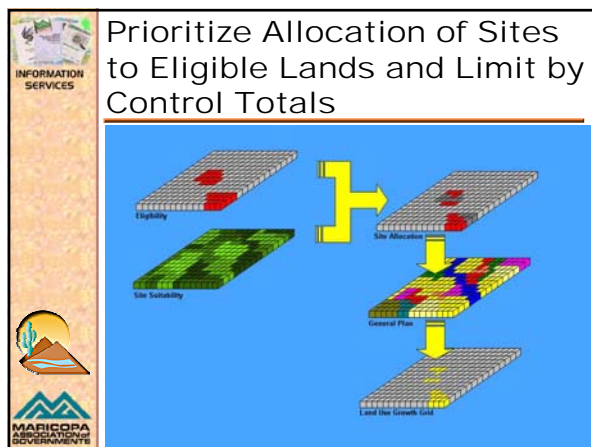
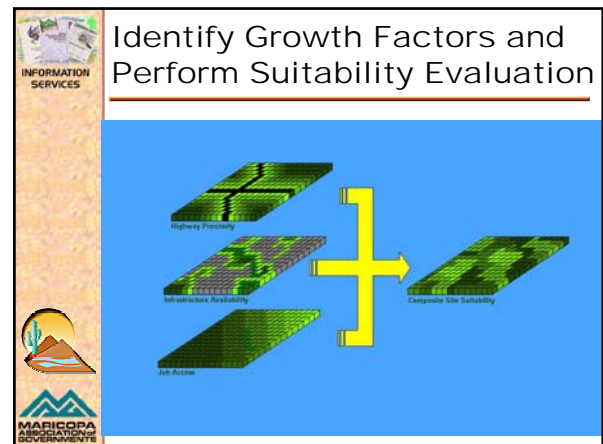
Subarea Allocation Model – Information Manager (SAM-IM)

- Totally within GIS
- County or sub-county control totals are used
- Each land use dealt with separately and in any order
- Different factors influence growth of each land use
- Grid based -- currently 1 acre

SAM-IM Special Features

- Development velocity curves determine timing of construction in active developments
- Automatic policy overrides to set minimum and maximum growth in each zone
- Scenario capability without rerunning entire model
- Feedback loops with subcounty model and with transportation model



Site Evaluation Module

Site Suitability Evaluation

Allocation Module

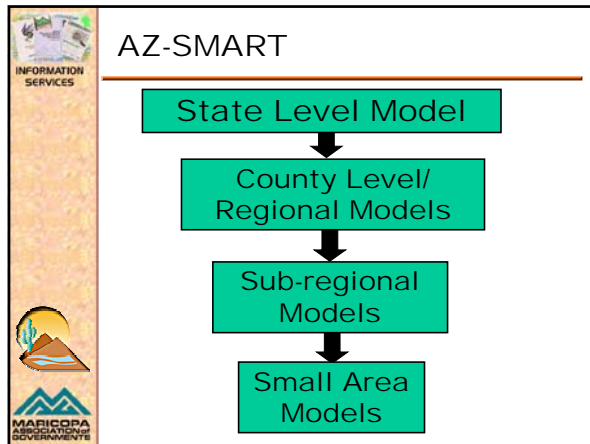
- Generates the Projection
- User Controls
 - Cell resolution
 - Allocation order
 - Eligibility definition
 - Allocation methodology
 - Site selection
 - Prorate

Socioeconomic File Generation - For any Geography, any Output Format

Projections for any Length Time Period

- Process is iterative
- Output for one time period becomes input to the next
- All GIS coverages can be maintained for each time period

Future Socioeconomic Projections Modeling




- ### What It Is
- Tools to create, edit, manage other tools
 - Tools to model, analyze, summarize, visualize
 - Ability to project land use, population, employment, other socioeconomic variables in GIS environment
 - Different installations, different methodologies
 - Module approach – plug and play

- ### What It Is Not
- Direct competition with other socioeconomic models
 - AZ-SMART should be able to incorporate existing models into its modeling suite
 - Re-inventing the wheel
 - AZ-SMART should have new features and capabilities currently not available
 - AZ-SMART should be more than just a SAM-IM copy

- ### Design Principles
- ESRI geodatabase using SDE
 - Common data model approach
 - Models may be different at different installations
 - Ability to share data without massaging
 - Ability to incorporate third party software
 - Object-oriented programming language, preferably Python
 - Nothing is hard-coded
 - Complete documentation


- ### Three Main Modules
- | | |
|--|--|
| <div style="background-color: yellow; padding: 5px; border: 1px solid black; display: inline-block;">Tool Manager</div> | <ul style="list-style-type: none"> • Library of tools <ul style="list-style-type: none"> – Similar to ESRI ToolBox and ModelBuilder |
| <div style="background-color: yellow; padding: 5px; border: 1px solid black; display: inline-block;">Data Manager</div> | <ul style="list-style-type: none"> • Manage databases <ul style="list-style-type: none"> – Similar to ESRI ArcCatalog |
| <div style="background-color: yellow; padding: 5px; border: 1px solid black; display: inline-block;">Project Manager</div> | <ul style="list-style-type: none"> • Links tools with data <ul style="list-style-type: none"> – Creates projects and scenarios |

- ### Prepare Conceptual Plan
- Conceptual description of AZ-SMART framework
 - Data and geographic needs
 - Preliminary database structure
 - Tools required and their relationships
 - Methodologies to be developed
 - Directory structure
 - Standards, naming conventions, terminology
 - Documentation




Requirements Document, Testing Plan and Resources

- **Detailed specifications of modeling suite**
 - Describe each tool
 - What does it do
 - What does it need
 - What does it produce
 - Describe all end-user interfaces
- **Provide complete testing plan**
- **Identify resource requirements**




Implementation Plan

- **Identify timeline and workplan for creation, delivery and implementation of AZ-SMART Phase I**
- **Schedule for hardware and software acquisition and training**
- **Identify individual project plans as necessary**
- **Emphasis on quality control and technical support**
- **Criteria for acceptance**




Implementation

- **Follow the Implementation Plan**
- **Demonstrate accuracy as agreed in criteria for acceptance**
 - Document results of test runs
 - Document calibration and validation
 - Prepare test projections for 2000, 2010, 2020, 2030 and 2040




Training, Documentation and Ongoing Support

- **Hands-on training**
 - At MAG and at PAG
- **Documentation to include**
 - Comments in source code
 - Metadata maintenance and editing capabilities
 - On-line help
 - Technical documentation
 - User documentation
- **Support for one year**




Multi-Phase Project

- **Phase I**
 - Enhanced Small Area Model implementation
 - Interface/applications to facilitate data development
 - Reporting and Visualization tools
 - Up to \$275,000
- **Phase II**
 - + sub-regional model
 - Up to \$225,000
- **Phase III**
 - + additional models
 - Up to \$225,000



SOQ Requirements


- **10 copies by 12:00 pm MST on April 12, 2006**
- **Maximum of 50 pages with:**
 - Signed cover letter
 - Work plan
 - Staffing plan with roles and resumes
 - Recent experience with similar projects
 - Proposer's Registration Form



INFORMATION
SERVICES

After Due Date

- **April 20th to 28th**
 - Phone and/or in-person and/or videoconference interviews
 - Firms will be contacted approximately one-week prior to in-person interview date



MARICOPA
ASSOCIATION of
GOVERNMENTS




INFORMATION
SERVICES

Questions



MARICOPA
ASSOCIATION of
GOVERNMENTS



INFORMATION
SERVICES

For More Information


Submit written questions to:

Anubhav Bagley
Socioeconomic Modeling Program Manager


Email: abagley@mag.maricopa.gov
Fax: (602) 254-6490

Answers will be posted at:

www.mag.maricopa.gov/rfp.cms?item=5804



MARICOPA
ASSOCIATION of
GOVERNMENTS



MARICOPA
ASSOCIATION of
GOVERNMENTS